

### **REMARKS**

In the Office action, claims 30, 31 and 36 were rejected as unpatentable over Michelson in view of Ngarmnil; claims 32-35 were rejected as unpatentable over Michelson in view of Ngarmnil and Muller; claims 37-38 were rejected as unpatentable over Michelson in view of Ngarmnil and Zierhofer; claim 39 was rejected as unpatentable over Michelson in view of Shannon; and claims 11, 12, 40 and 41 were allowed.

As a preliminary matter, it is noted that prior to the instant Office action, the Office entered a Final action that was mailed April 5, 2005. Applicants properly responded to that Office action in order to place the application in condition for allowance (among other things canceling rejected claims 1-9 and placing claim 10 in independent form as present claim 41), but thereafter the Office entered the present non-final Office action. Accordingly, Applicants are re-instating previously canceled claims as they are believed to be allowable over the art of record. New claims 42-50 correspond to previously canceled claims 1-9.

As to the rejection of claims 30, 31 and 36, the Michelson reference teaches little that is not already disclosed in Orban.

Michelson suggests only that one of the filters might be a low pass filter while the remainder are band pass filters. However, the Office action states that it would have been obvious to the skilled person to replace each of the individual band pass filters of Michelson with two low-pass filters whose outputs are subtracted from each other. However, as similarly noted in previous responses by Applicants with respect to the Orban reference, Michelson describes a filter arrangement which operates on voltage signals, and that the skilled person would have been prejudiced against implementing band pass filters using parallel low pass filters and a subtractor, as voltage subtractors are difficult and expensive to implement. Claim 30 recites that the subtractor subtracts output currents of the filters.

The present invention is directed to low pass filters using log-domain filters which inherently operate in the current domain. The outputs of the low pass filters are therefore current signals, and the subtraction of current signals is achieved by coupling the outputs together.

Taking Michelson as a starting point, the skilled person would not have sought to implement the band pass filter with a pair of low pass filters because of the perceived difficulty

Attorney Docket No.: 22749/04002

Application No.: 09/600,206

Art Unit 2644 (J. Michalski)

in integrating a suitable voltage subtractor. He would therefore not even have begun to look for a document such as Ngarmnil.

Considering further Ngarmnil, the teaching of this document is similar to that of the Toumazou paper previously considered. Ngarmnil teaches a band pass filter constructed using two **cascaded** low pass filters. It does not teach a parallel arrangement of low pass filters which requires **subtraction** of the filter outputs. Therefore, even if the skilled person were to substitute the band pass filter of Ngarmnil into the circuit of Michelson, he would not arrive at the claimed invention.

Applicants therefore respectfully submit that claims 30-39 are allowable over the art of record.

As to the re-instated claims 1-9, now numbered 42-50, Applicants reiterate the arguments presented in favor of these claims in the response filed October 19, 2004 with respect to the Orban reference. In the Final Office action, present claim 42 and claims 43-48 (at that time numbered 1-7) were rejected as unpatentable over Orban in view of Ngarmnil. As noted above, Ngarmnil is similar to the teachings of Toumazou and for the stated reasons does not overcome the deficiencies of the Orban or the Michelson references.

Based on the foregoing remarks and amendments, Applicants believe that all of the claims in this case are now in condition for allowance and an indication to that effect is respectfully requested.

Respectfully submitted,

Date: 12-28-05

By: 

Leonard L. Lewis Reg. No. 31,176  
(216) 622-8683